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# The Similarity of Motor Carriers' and Shippers' Perceptions of the Carrier Choice Decision Improve

by Shane R. Premeaux

*This study re-examines the perceived importance of 36 carrier selection variables to both motor carriers and shippers. The ranking discrepancies identified indicate that shippers and carriers classify most, but not all motor carrier selection variables similarly. Fortunately, motor carrier perceptions have improved since the original 2007 study. To enhance shipper satisfaction, carriers must emphasize the more important selection variables. Carriers now realize the importance of providing information and services through a comprehensive, Web-enhanced electronic data interchange (EDI). Currently carriers need to key on offering more flexible rates and respond effectively to emergency or unexpected situations.*

## INTRODUCTION

According to the Channel Challenges survey, “EDI is growing and it’s probably one of the quickest ways to improve efficiency, reduce costs and generate better information” (Allen and Gordon 2008). Basically, electronic data interchange (EDI) is a method of maximizing collaboration through data sharing throughout the supply chain (Distributor’s Toolbox 2008). Hyundai Merchant Marine has combined the Internet and EDI technology for a complete online shipping business with services such as booking, bill of lading management, and tracking services (Hyundai 2008). Serec uses EDI to serve retailers including Trader Joe’s, Sears, Adidas, Nike, LA Gear, and Wilson (Farrell 2008). Beijing Benz Daimler Chrysler is focusing on the supply chain to become even more competitive and to that end has implemented a Web-based EDI system (Automotive Logistics 2008).

Recently, there has been a significant push for Web-enhanced EDI systems, so much so that a Web-enhanced EDI may become an essential component of the service mix. Carriers have reported that EDI systems are being implemented because they reduce errors and costs (Official Board Markets 2008). In addition, companies like Circuit City and Mervyns view EDI systems as essential for reducing cost and streamlining operations (Managing Accounts 2008, Apparel Magazine 2008). EDI technology is also used by the book industry to reduce costs, thereby benefiting every member of the supply chain (Thynne 2008).

Now comprehensive and cost-effective EDI solutions are available for small and mid-tier companies (Apparel Magazine 2008). In addition, Internet-enabled EDI provides greater efficiency for performing business transactions and is much more affordable than other alternatives (Zhenyu, Janz and Frolick 2008). VSR Logistics has an Internet-enabled EDI system that allows clients to monitor their shipments, as well as allowing VSR to execute daily procedures in both its domestic and international operations (U.S. Business Review 2008). The affordability and the efficiency that Web-enhanced EDI systems now offer make them an indispensable business tool.

The affordability and usefulness of Web-enhanced EDI systems, combined with the more widespread acceptance of such systems, may make them an essential part of the service mix. Therefore, it seems prudent to determine if there has been a shift in attitudes specifically relating to a Web-enhanced EDI. Since shippers are “highly involved, critical, and discerning in their selection of a carrier,” it is essential that carriers focus on better satisfying shipper preferences (Snyman 2006, MacLeod et al. 1999). Carriers must key on actual shipper needs to compete in an ever-changing marketplace, and to key on shipper needs, carriers must understand them (McMullen 2000).

Focusing on carrier selection criteria has been the subject of some empirical investigations, but few studies have sampled *both* shippers and carriers regarding the importance of motor carrier selection

variables. The Evans and Southard (1974) study of manufacturers, wholesalers, retailers and motor carriers in Oklahoma revealed how shippers and carriers perceived 28 factors thought to be important in the selection decision. Prior to deregulation, the Evans and Southard (1974) study found that there were six perceptual differences between shippers and carriers. In the 1970s, other empirical investigations relating to carrier selection did not specifically investigate the views of both shippers and motor carriers (Stock 1976, Jerman et al. 1978, and McGinnis 1979). In the 1980s, studies had a narrow focus, examining only the shipper perspective of the transportation seller-buyer relationship (Krapfel and Mentzer 1982, Baker 1984, Chow and Poist 1984, and Granzin et al. 1986). The Abshire and Premeaux (1991) study investigated the importance of 35 motor carrier selection variables to both shippers and carriers, which included the 28 variables examined by Evans and Southard (1974). This research is a replication of the Premeaux (2007) study and basically reexamines how both carriers and shippers rate 36 motor carrier selection variables.

## **DATA BASE PROFILE AND RESEARCH METHODS**

In 2008 and 2006, a sample of traffic managers and motor carrier managers provided the databases for these two studies. In both studies, the sample of traffic managers is composed of the same individuals employed by various manufacturing, wholesaling and retailing organizations. In both studies, the same motor carrier manager sample was used. This is not a matched sample, so the sample of shippers is not necessarily a user group of the particular carriers in the carrier group. Subsequently, no judgment can be made as to whether carriers are responding to their shippers' priorities regarding specific variables. However, the sample population of both shippers and carriers is exactly the same for both the 2008 and the 2006 surveys.

A mail survey was chosen because of the time necessary to complete the questionnaire and the geographic dispersion of the respondents. The findings reported in 2008 were from a survey conducted between April 2008 and June 2008. In 2008, questionnaires were mailed to the same 2000 shipper traffic managers and the same 2000 motor carrier managers as in 2006. Of those queried in 2008, 702 shippers and 681 carriers responded, with the number of usable questionnaires being 698 and 643, respectively. The usable responses in 2008 comprised 34.9% and 32.1% of the survey population, which should provide a reasonably accurate representation of the actual population.

The findings reported in 2007 were from a survey conducted between September 2006 and November 2006. In 2006, questionnaires were mailed to 2000 shipper traffic managers and 2000 motor carrier managers. Of those queried in 2006, 794 shippers and 685 carriers responded. The number of usable questionnaires in 2006 was 762 and 651, respectively. The usable responses in 2006 comprised 38.1% and 32.5% of the survey population, which compares quite favorably with the usable response rate in 2008. The 2006 survey instrument from which the 2007 Premeaux findings were drawn was also used in the 2008 investigation.

Only nationwide motor carriers were surveyed, and their demographic profiles differed only slightly from the 2006 carrier group. In 2008, 78% of carriers were truckload (TL) firms and 22% were less-than-truckload (LTL) firms. In 2006, 74% of carriers were truckload (TL) firms and 26% were less-than-truckload (LTL) firms. In 2008 and 2006, supplemental analysis revealed that no significant differences exist in selection variables regarding TL and LTL firms. Of the shippers responding in 2008, 26% were producers of home products, 23% produced industrial goods destined for further processing, 20% were food producers, 17% produced electronics products and 14% classified themselves as "other" types of producers.

Of the shippers responding in 2006, 24% were producers of home products, 25% produced industrial goods destined for further processing, 22% were food producers, 11% produced electronics products and 18% classified themselves as "other" types of producers. In 2008, 81% of the shipper sample stated that they normally ship in large lot sizes. In 2006, 78% of the shipper sample stated that they normally ship in large lot sizes. The characteristics of the 2008 and the 2006 survey groups are quite similar, which should allow for meaningful comparisons.

The 2008 investigation includes the 36 selection variables used in the Premeaux (2007) study. These 36 variables include the 28 factors used by Evans and Southard (1974), plus the seven variables added by Abshire and Premeaux (1991), and a Web-enhanced Electronic-Data-Interchange (EDI) factor. Advanced Web-enhanced EDI systems, with Internet interfaces, are now popular because they offer many advantages, including electronic billing, rate change calculations, pickup and delivery scheduling and shipment tracing (McGovern 1998). McMullen (2004) found that EDI has a positive and significant impact on carrier efficiency. Crum, Johnson and Allen (1998) discovered that the greatest perceived benefit of EDI is in providing better consumer service. Specifically, utilizing the Internet whenever possible lowers overall transaction costs. However, since Web-based services are only as good as the information systems that support them, hybrid systems that use network providers for some services, and the Internet for others, were most prevalent. Many in the transportation industry are adopting advanced Web-enhanced EDI systems that work in conjunction with a Web site to improve customer service.

The 36 selection criteria listed in Tables 1 and 2 are commonly used by shippers when making their motor carrier selection decisions. Each of the 36 variables included in the survey were briefly defined on the survey instrument to help ensure respondent understanding of each variable. Carriers were asked their perceptions of the importance that shippers place on each selection variable. Shippers were also asked to rate the importance of each selection variable. The following scale was used by both shippers and carriers to rate the importance of each selection variable:

1. Not important
2. Slightly important
3. Moderately important
4. Very important
5. One of the most important factors

### **PERCEPTUAL DIFFERENCES BETWEEN SHIPPERS AND MOTOR CARRIERS REGARDING MOTOR CARRIER SELECTION CRITERIA**

Descriptive statistics were utilized to get a “feel” for the data, and analysis of variance was used to compare the perceived importance assigned to each of the 36 motor carrier selection criteria by both shippers and carriers. Carrier and shipper mean scores were calculated and compared for each selection factor, and an F statistic was computed using a significance level of .05. Summary results for 2008 are presented in Table 1, and asterisks are used to identify variables with a statistically significant difference between the perception of shippers and carriers. Table 2 provides the summary results of the original investigation (Premeaux 2007).

For 2008, there are only six significant differences between shippers and carriers (see Table 1). In the 2007 investigation, there were statistically significant differences in the perceptions of shippers and carriers for nine of the 36 selection criteria (see Table 2). Of the six differences in the 2008 study, shippers rated two criteria higher than carriers, down from five in the previous study (Premeaux 2007). Carriers did not accurately perceive the level of importance of carrier leadership in offering more flexible rates and the significance of carrier response in emergency or unexpected situations. However, carriers now understand the importance of information provided to shippers by carriers, the significance of computerized billing and tracing services, and the importance of a Web-enhanced EDI. Apparently, carriers now realize the significance of this information component to shippers, and are therefore more likely to focus on these variables. Possibly, carriers now realize that staying competitive means offering a more comprehensive information component, because shippers are demanding faster and more accurate information flows.

**Table 1: 2008 Summary of Findings: The Perceptions of Shippers and Motor Carriers Regarding Carrier Selection Variables**

Carrier Selection Criteria	Shipper Mean Rating (N=698)	Carrier Mean Rating (N=643)	F	PR>F
Reliability of on time delivery	4.44	4.51	.69	.3566
Reliability of on time pick-up	4.51	4.50	.82	.3219
Financial stability of carrier	4.31	4.29	.53	.5216
Total transit time for the shipment	4.35	4.31	.41	.5963
Carrier response in emergency or unexpected situations	4.53*	3.78	22.17	.0004
Web-Enhanced Electronic-Data-Interchange (EDI)	4.71	4.59	.77	.5418
Carrier's reputation for dependability	4.13	4.69*	14.58	.0005
Handling expedited shipments	4.19	4.23	.47	.5791
Carrier's leadership in offering more flexible rates	4.79*	4.03	29.16	.0004
Computerized billing and tracing services	4.59	4.51	.66	.6417
Geographic coverage of carrier	4.13	4.09	9.71	.2472
Past performance of the carrier	4.08	4.61*	19.37	.0001
Information provided to shippers by the carrier	4.49	4.41	.31	.5911
Ease of claim settlement (loss or damage)	4.11	4.15	.53	.6275
Carrier cooperation with shipper's personnel	4.01	4.71*	22.41	.0002
Carrier representative's knowledge of shippers needs	3.79	4.67*	39.41	.0001
Freight loss experience with the carrier	3.91	3.89	.58	.4796
Condition of equipment	4.12	4.14	.39	.5987
Discount programs offered by carriers	3.72	3.61	.23	.6741
Scheduling flexibility	4.01	3.99	.17	.8931
Freight damage experience with the carrier	4.22	4.24	.41	.5361
Carrier assistance in obtaining rate or classification changes	3.59	3.60	.91	.4737
Carrier attitude toward acceptance of small shipments	3.61	3.59	4.18	.1766
Carrier honors shipper's routing requests	3.57	3.53	4.69	.1211
Personal relations with the carrier	4.22	4.26	.56	.6891
Carrier transportation equipment designed to facilitate easy and fast loading and unloading	3.24	3.27	.14	.7899
Overcharge claims service	3.41	3.39	.21	.7833
Feedback from the consignee to the shipper about the quality of service given by specific carriers	3.69	3.71	.29	.9214
Courtesy of vehicle operators	4.03	4.06	.52	.7814
Carriers ability to handle special products	3.27	3.31	.63	.5313
Diversion and reconsignment privileges	2.91	2.93	.17	.9136
Fabrication in transit privileges	2.61	2.65	8.55	.3017
Carrier willingness to participate in freight consolidation practices	2.63	2.59	.56	.7753
Regular calls by carrier sales representatives	3.74	3.77	.71	.6203
Opinions or recommendations of employees of other firms	3.28	3.31	.19	.8651
Gifts/gratuities offered by carriers	1.27	1.38	.91	.5843

\*denotes significance at the .05 level

**Table 2: 2007 Summary of Findings: The Perceptions of Shippers and Motor Carriers Regarding Carrier Selection Variables\*\***

Carrier Selection Criteria	Shipper Mean Rating (N=762)	Carrier Mean Rating (N=651)	F	PR>F
Reliability of on time delivery	4.51	4.55	.87	.3857
Reliability of on time pick-up	4.46	4.49	.98	.3042
Financial stability of carrier	4.23	4.21	.49	.5783
Total transit time for the shipment	4.31	4.23	.35	.6157
Carrier response in emergency or unexpected situations	4.57*	3.81	17.24	.0004
Web-Enhanced Electronic-Data-Interchange (EDI)	4.63*	4.09	11.63	.0002
Carrier's reputation for dependability	4.09	4.63*	15.31	.0006
Handling expedited shipments	4.13	4.19	.42	.5891
Carrier's leadership in offering more flexible rates	4.33*	3.68	34.19	.0002
Computerized billing and tracing services	4.49*	4.07	12.72	.0001
Geographic coverage of carrier	4.05	4.01	2.63	.1941
Past performance of the carrier	4.11	4.62*	15.83	.0001
Information provided to shippers by the carrier	4.48*	4.07	18.29	.0003
Ease of claim settlement (loss or damage)	4.03	4.12	.49	.6018
Carrier cooperation with shipper's personnel	3.91	4.52*	26.35	.0002
Carrier representative's knowledge of shippers needs	3.71	4.62*	42.33	.0001
Freight loss experience with the carrier	3.78	3.82	.53	.4936
Condition of equipment	4.08	4.11	.34	.6284
Discount programs offered by carriers	3.69	3.58	.19	.6978
Scheduling flexibility	3.92	3.89	.13	.9120
Freight damage experience with the carrier	4.29	4.31	.33	.5896
Carrier assistance in obtaining rate or classification changes	3.64	3.63	.87	.4318
Carrier attitude toward acceptance of small shipments	3.66	3.62	3.28	.1037
Carrier honors shipper's routing requests	3.46	3.41	2.97	.0894
Personal relations with the carrier	4.19	4.22	.37	.7129
Feedback from the consignee to the shipper about the quality of service given by specific carriers	3.79	3.77	.14	.8436
Courtesy of vehicle operators	3.94	4.01	.36	.6710
Carriers ability to handle special products	3.06	3.09	.44	.4765
Diversion and reconsignment privileges	2.93	2.98	.09	.9672
Fabrication in transit privileges	2.58	2.55	.243	.1306
Carrier willingness to participate in freight consolidation practices	2.43	2.47	.29	.8741
Regular calls by carrier sales representatives	3.68	3.73	.41	.5019
Opinions or recommendations of employees of other firms	3.12	3.19	.07	.8942
Gifts/gratuities offered by carriers	1.39	1.46	.78	.5319
Carrier transportation equipment designed to facilitate easy and fast loading and unloading	3.10	3.08	.09	.8687
Overcharge claims service	3.31	3.35	.11	.8074

\*denotes significance at the .05 level

\*\*Source: Premeaux, S.R. "Motor Carriers' and Shippers' Perceptions of the Carrier Choice Decision." Journal of the Transportation Research Forum 46 (3), (2007): 5-12.



In both the 2008 and 2007 studies, shippers rated leadership in offering more flexible rates and carrier response in emergency or unexpected situations higher than did carriers. This is quite unfortunate since successful motor carriers must respond to actual shipper needs while reducing costs (Dobie 2005). Motor carriers are often selected on the basis of time/speed and cost, which further signifies the importance of carrier response and rate flexibility (Saleh and LaLonde 1972).

Fortunately, even though statistically significant differences still exist, carriers now rate leadership in offering more flexible rates as very important. This higher rating by carriers may mean that rate flexibility has become a more important part of their competitive strategies.

Shippers no longer rate the significance of computerized billing and tracing services, the importance of information provided to shippers by carriers, and the importance of a Web-enhanced EDI higher than do carriers. Carriers now realize that shippers expect a solid information component to aid in real-time tracking, tracing, and communication. Now, carriers more fully appreciate that a Web-enhanced EDI will help ensure on-time performance by improving communication and real-time tracking and tracing capabilities, thereby enhancing service (Kent, Parker, and Luke 2001).

With this new appreciation of the importance of the information component, carriers may strive to develop better service packages based on existing and emerging technology to meet the needs of shippers (Chappuis, Frick, and Roche 2004). Fortunately, by embracing technological advancements, motor carriers may be better able to deal with conflicting demands from shippers who want more services for less cost. Unfortunately, carriers still overrated the importance of the same four selection criteria, which may indicate that they do not yet truly appreciate the overall nature of shipper needs.

Once again, carrier cooperation with shipper personnel, past performance of the carrier, carrier representative's knowledge of shipper needs, and carrier's reputation for dependability were all rated higher by carriers than shippers. All four of the selection criteria rated higher by carriers in the 2008 study were also rated higher by carriers in the original investigation (Premeaux 2007). Unfortunately, carriers still focus too much on past performance, but they do realize the importance of cooperation and it is even more significant that they now better understand shipper needs.

Overemphasizing less important selection variables instead of providing leadership in offering more flexible rates and positively responding in emergency or unexpected situations could negatively impact the quality of service carriers provide to shippers (as perceived by shippers). Fortunately, carriers now embrace the importance of providing information and services through a comprehensive Web-enhanced EDI. Basically, a service mix that emphasizes the less significant variables, and de-emphasizes the more significant selection factors, could result in shipper dissatisfaction and subsequent carrier losses. In all probability, the most effective carrier marketing strategies will offer service mixes that emphasize variables more in line with the importance placed on them by shippers. However, it is very encouraging that carriers now appreciate the importance of the information component to shippers.

## **IMPLICATIONS**

To effectively deal with an increasingly competitive operating environment, motor carriers must truly appreciate the nature of shipper needs and strive to satisfy those needs (Dobie 2005). Carriers cannot afford the inefficiencies that result from a lack of congruence between shipper and carrier perceptions regarding the importance of service factors (Thuermer 1992). Fortunately, carrier appreciation of shipper needs has improved, with only six perceived differences in this study down from nine perceived differences in 2007. As shippers strive to create an integrated, time-based supply chain, motor carriers must provide specific service requirements at reasonable rates. Since carriers now accept that the information component is critical to shippers, who are often under time constraints, their focus may well be on satisfying these needs, thereby improving their service mixes.

Since deregulation, shippers have been developing long-term relationships with fewer carriers to enhance service delivery and to gain pricing leverage (Marcus 1987, Baker 1984, Crum and Allen 1990). Shippers are reducing the number of carriers they deal with, and therefore carriers that do not respond to changing shipper needs will become obsolete and cease to exist, making an understanding

of shipper needs even more critical (Dobie 2005). This is possibly why carriers now appreciate the importance of investing in the technology needed to respond to ever-evolving shipper needs.

## SUMMARY

Motor carriers have gained a greater appreciation of the value of providing information, as well as the significance of providing billing and tracing services through a comprehensive Web-enhanced EDI. Most likely, carriers now realize that both groups can benefit from a Web-enhanced information system that can provide better service and even reduce costs. Another possibility is that shippers are now demanding a core information system that supports their various business endeavors. More so than in the past, these variables may have become key selection factors.

It is also encouraging that even though significant statistical differences still exist between the perceptions of shippers and carriers regarding the rate flexibility issue, both groups now rate this factor as very important. Carriers may now focus more on improving this service factor because of its higher rating. Since economic survival of motor carriers depends on understanding and meeting shipper needs, this greater level of carrier appreciation of these needs is encouraging. Greater congruence of shipper and carrier perceptions will lead to less carrier turnover and more stable service.

Even though service ranking discrepancies indicate that shippers and carriers did not classify six selection variables similarly, this level of understanding is an improvement over the nine significant differences in the 2006 survey group. Unfortunately, carriers still overestimate the importance of the same four variables, including carrier reputation, past performance, cooperation, and knowledge of shipper needs.

Carriers must provide required service levels at competitive rates, and this improved understanding of the importance shippers place on each selection variable may well result in marketing mixes that enhance shipper satisfaction, thereby increasing carrier market share. Fortunately, carriers now realize the importance of providing information and billing and tracing services through a comprehensive Web-enhanced EDI, but they must also focus on offering more flexible rates and responding effectively to emergency or unexpected situations.

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